Association of Sleep Quality and Stress with Quality of Life Among Nurses Working in Private Hospitals in Kathmandu, Nepal

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ABSTRACT

Background: Sleep is vital for physical and mental health, yet nurses in tertiary care settings often experience poor sleep due to long hours and job stress, affecting cognitive function and overall quality of life (QOL). Limited research has examined the relationship between sleep quality, stress, and QOL among nurses in Kathmandu's private hospitals. This study aims to explore these associations to inform interventions that enhance nurse well-being and care quality.

Methods: A cross-sectional study was conducted from September to October 2022 among nurses in three tertiary-level private hospitals in Kathmandu using purposive sampling. Data were collected via a structured, self-administered standard questionnaires. Data analysis was done using SPSS. Ethical approval and informed consent were obtained.

Results: Among 199 nurses, 83.9% reported poor sleep quality, and 69.3% had poor quality of life (QoL). Poor sleep was prevalent across age, marital status, and family type, with higher rates among those with lower education and higher perceived stress. Mean QoL domain scores ranged from 49.48 to 55.53. Good sleep quality was significantly associated with better QoL (AOR=2.362, 95% CI: 1.045–5.339, p=0.039). Absence of perceived stress had the strongest positive association with good QoL (AOR=10.52, 95% CI: 2.18–50.71, p=0.03).

Conclusion: Poor sleep quality and high stress levels are common among nurses and significantly impact their quality of life, with stress being the strongest predictor. Addressing sleep and stress through workplace wellness programs, balanced shift schedules, and customized interventions may enhance nurse well-being and care quality. Further research with larger, diverse samples is recommended.

Keywords: Hospital; Nurses; Quality of life; Sleep quality; Stress.

INTRODUCTION

Sleep is crucial for maintaining proper bodily functions, and inadequate or poor-quality sleep can harm both physical and mental health. It can disrupt metabolism, increase the risk of heart problems, and negatively affect cognitive functions such as memory, attention, and decision-making. Additionally, lack of sleep can impair emotional regulation and overall brain performance.[1-3] Nurses, especially in tertiary hospitals, often experience poor sleep quality, with prevalence rates ranging from 60% to 75%.[4-9] Long hours in nursing can reduce sleep quality, impacting overall quality of life (QOL).[10-12] Research suggests a link of sleep & stress, with life quality focusing on a multidimensional approach of nurse's wellbeing.[13-15] Limited research has examined sleep quality, stress, and quality of life among nurses in Kathmandu's private hospitals, where healthcare demands and working conditions vary. This study aims to assess these associations to inform interventions improving nurses' well-being and care outcomes.

METHODS

A cross-sectional study was conducted from September to October 2022 among nurses aged 20–50 years at three tertiary-level private hospitals in Kathmandu Metropolitan, using purposive sampling. Nurses with pre-existing psychiatric diagnoses or sleep disorders were excluded to reduce confounding factors. Data were collected through a self-administered structured questionnaire covering socio-demographic information, sleep quality, perceived stress, and QoL. Validated tools included the Pittsburgh Sleep Quality Index (PSQI), which assesses sleep quality over a month with scores above five indicating poor sleep (Cronbach's alpha 0.78); [16] the Perceived Stress Scale-10 (PSS-10), a 10-item scale measuring stress levels with categories for low, moderate, and high stress (Cronbach's alpha 0.78); [17] and the WHO Quality of Life-BREF (WHOQoL-BREF), a 26-item instrument evaluating physical, psychological, social, and environmental domains of QoL, with scores above 60 reflecting high quality of life. [18] Data analysis was performed using SPSS version 25, with descriptive statistics summarizing demographic variables, chi-square tests assessing associations with QoL (significance set at $p < 0.05$), and multivariable logistic regression identifying predictors of QoL while adjusting for confounders. Both unadjusted and adjusted odds ratios with 95% confidence intervals were reported. Ethical approval was obtained from the Yeti Health Sciences Academy Institutional Review Board (Ref No. 079/080/31), participating hospitals consented, and written informed consent was collected from all participants, ensuring confidentiality and voluntary participation.

RESULT

Out of 199 participants, 167 (83.9%) were classified as having poor sleep, while 32 (16.1%) reported good sleep. The data shows that poor sleep is common across different groups. Both younger participants (under 24) and those aged 24 or older have high rates of poor sleep, with the older group having a slightly higher percentage. Marital status appears to have little effect, as both married and unmarried individuals report similar poor sleep rates. Family type, whether nuclear or joint, also shows comparable sleep quality. Educational status indicates that participants with PCL education have a higher proportion of poor sleep compared to those with a Bachelor's or BSN degree. Tobacco exposure showed slightly higher rate of poor sleep. Additionally, perceived stress seems to influence sleep quality, with individuals experiencing high stress reporting more poor sleep than those with low stress. (Table 1)

Table 1: Sociodemographic Distribution Aligning Sleep Quality of the Respondents

Variables	Poor Sleep (n=167)	Good Sleep (n=32)
Age (Median age: 24)		
Younger than 24	90 (81.8%)	20 (18.2%)
Older than or equals 24	77 (86.5%)	12 (13.5%)
Marital Status		
Unmarried	108 (82.4%)	23 (17.6%)
Married	59 (86.8%)	9 (13.2%)
Family Type		
Nuclear	119 (83.2%)	24 (16.8%)
Joint	48 (85.7%)	8 (14.3%)
Educational Status		
PCL	113 (85.6%)	19 (14.4%)
Bachelors/BSN	54 (80.6%)	13 (19.4%)
Tobacco Exposure		
Unexposed	144 (83.2%)	29 (16.8%)
Exposed	23 (88.5%)	3 (11.5%)
Perceived Stress		
Low Stress	8 (66.7%)	4 (33.3%)
High Stress	159 (85.0%)	28 (15.0%)

Table 2: Summary of Domain Score of Qualities of Life and Categories of Quality of Life

Domain	Mean ± SD	Range (Min–Max)
Physical	49.48 ± 12.21	18 – 75
Psychological	55.53 ± 13.54	17 – 83
Social	55.15 ± 18.85	8 – 100
Environmental	55.01 ± 14.20	19 – 100
Quality of Life category	Poor (score <60)	138 (69.3%)
	Good (score ≥60)	61 (30.7%)

The mean scores for the physical, psychological, social, and environmental quality of life domains ranged from approximately 49.48 to 55.53, with standard deviations between 12.21 and 18.85, indicating variability in responses. The score ranges were wide, with minimum scores as low as 8 in the social domain and maximum scores reaching up to 100 in the Social and Environmental domains. Additionally, 69.3% of participants were classified as having a poor quality of life (score < 60), while 30.7% had a good quality of life (score ≥ 60). (Table 2)

Variables	UOR (95% CI)	p-value	AOR (95% CI)	p-value
Educational Level: Bachelors or above	2.154 (1.15–4.025)	0.005*	1.867 (0.963–3.619)	0.065
Sleep Quality (PSQI): Good	2.711 (1.252–5.871)	0.011*	2.362 (1.045–5.339)	0.039*
Perceived Stress (PSS): Absent	13.33 (2.82–62.94)	0.001*	10.52 (2.18–50.71)	0.03*

** p value statistically significant at 95% CI, CI: Confidence Interval, UOR: Unadjusted Odds Ratio, AOR: Adjusted Odds Ratio*

The analysis reveals that individuals with a bachelor's degree or higher education had 2.154 times higher odds of reporting good quality of life in the unadjusted model (95% CI: 1.15–4.025, p=0.005), but this association became non-significant after adjustment (AOR=1.867, 95% CI: 0.963–3.619, p=0.065). Good sleep quality showed a significant positive association with good quality of life in both unadjusted (OR=2.711, 95% CI: 1.252–5.871, p=0.011) and adjusted models (AOR=2.362, 95% CI: 1.045–5.339, p=0.039). The absence of perceived stress demonstrated the strongest association, with unadjusted odds of 13.33 (95% CI: 2.82–62.94, p=0.001) and adjusted odds of 10.52 (95% CI: 2.18–50.71, p=0.03). (Table 3)

DISCUSSION

The findings of this study highlight a significant prevalence of poor sleep quality (83.9%) among participants, consistent with previous research on healthcare workers and shift workers.[1-3] The high rates of poor sleep across different demographic groups, including age, marital status, and family type, suggest that sleep disturbances are pervasive and not strongly influenced by sociodemographic factors alone. This aligns with studies indicating that shift work and occupational stress are major contributors to sleep deprivation among nurses.[4,5]

In the initial chi-square analysis (not shown), variables demonstrated significant associations with quality of life. These significant variables were included in the subsequent regression analysis to identify independent predictors. The association between higher education (Bachelor's degree or above) and better quality of life in the unadjusted model (OR = 2.154, p = 0.005) is consistent with literature linking education to improved health outcomes.6 However, the loss of significance after adjustment (AOR = 1.867, p = 0.065) suggests that other factors, such as sleep quality and stress, may mediate this relationship. This finding is supported by research demonstrating that sleep and mental health often have a stronger influence on quality of life than educational attainment alone.[7,8]

Good sleep quality was significantly associated with better quality of life in both unadjusted (OR = 2.711, p = 0.011) and adjusted models (AOR = 2.362, p = 0.039), reinforcing existing evidence that sleep is a critical determinant of well-being.[9,10] The strong link between poor sleep and reduced quality of life has been documented in nurses and shift workers, where irregular schedules disrupt circadian rhythms and impair physical and psychological health.[11,12]

The most robust predictor of good quality of life was the absence of perceived stress (unadjusted OR = 13.33, adjusted OR = 10.52), which aligns with studies showing that stress significantly deteriorates sleep and overall well-being.[13, 14] The wide confidence intervals for stress-related odds ratios suggest variability in individual responses, possibly due to differences in coping mechanisms or resilience.[15]

However, the study has some limitations including recruitment bias, limited sample size (199 nurses from three institutions), lack of a control group, self-reporting bias and missing data on important behaviors like substance abuse and electronic device use, coping mechanisms, and so forth. These limitations highlight the need to exercise caution when extrapolating results from the study population.

CONCLUSION

This study concludes that poor sleep quality and high stress levels are prevalent among healthcare workers and significantly impact their quality of life, with stress being the strongest predictor. While higher education initially showed a positive association with quality of life, this relationship became insignificant when accounting for sleep and stress factors, suggesting these variables

play a more crucial role. These findings highlight the importance of providing support in healthcare settings to help people better manage sleep problems and stress. Recommendations include implementing workplace wellness programs to improve sleep hygiene and reduce stress, adopting more balanced shift rotations, and conducting further research with larger, more diverse samples and objective measures. These steps could significantly enhance healthcare workers' well-being and, consequently, improve patient care outcomes. Future studies should also explore additional factors like coping mechanisms and substance use to better understand their influence on sleep and quality of life in this population.

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